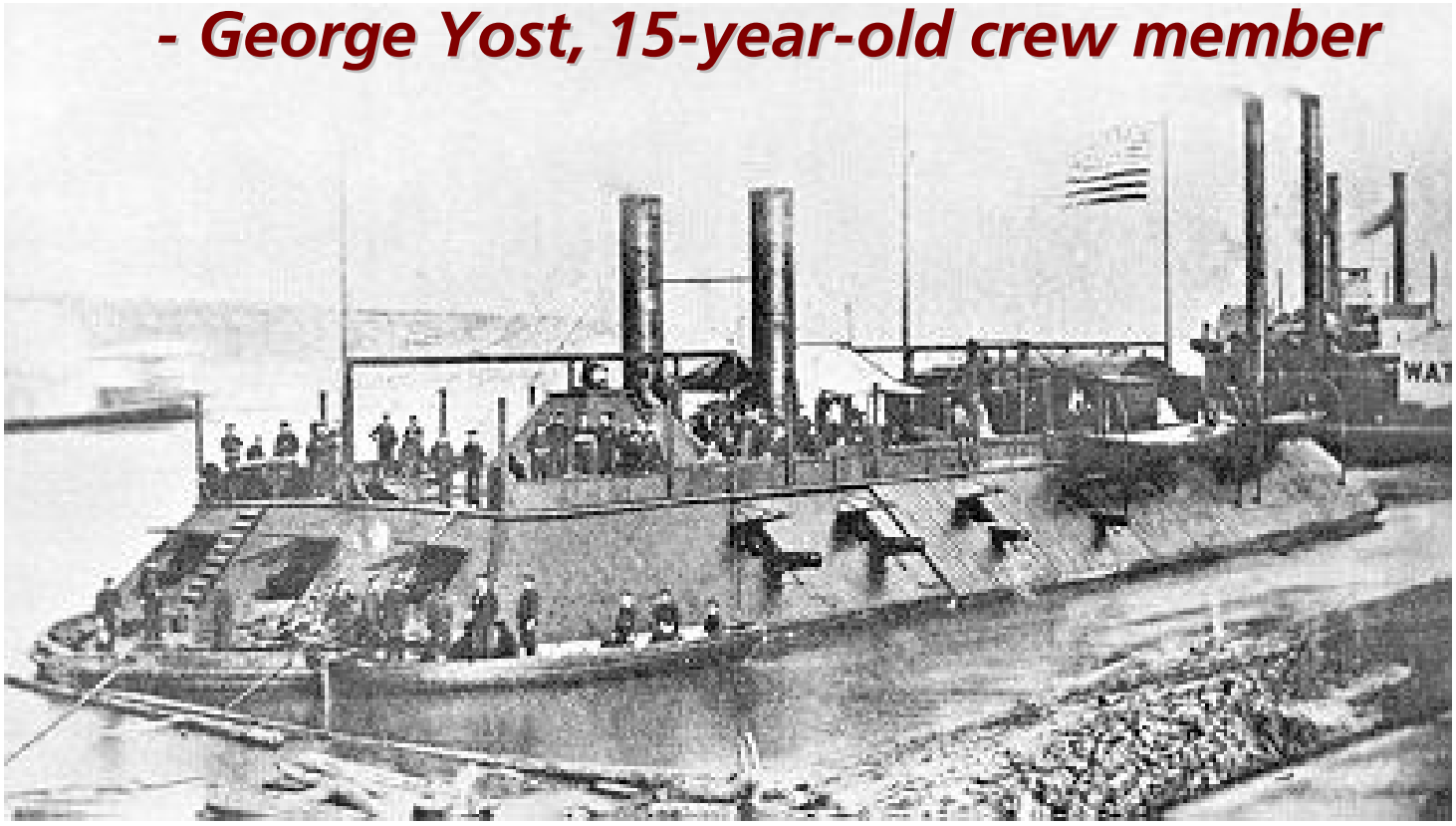
National Park Service
U.S. Department of the Interior

Vicksburg National Military Park

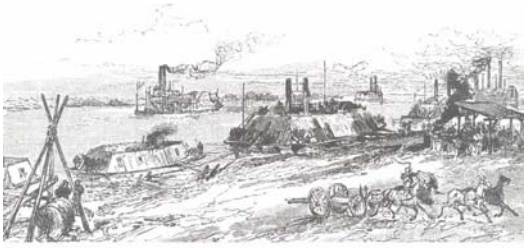
The USS Cairo

"Nothing of the Cairo could be seen 12 minutes after the first explosion, excepting the smoke stacks, and the flag staff from which still floated the flag above the troubled waters."

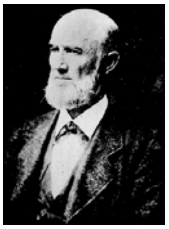
- George Yost, 15-year-old crew member



City Class Ironclads on the Mississippi



Union gunboats under construction at Carondelet, Missouri. James B. Eads possessed the organizing skill to build the North a fleet of river ironclads.



James B. Eads

Andrew H. Foote

David Dixon Porter

Thomas O. Selfridge, Jr.

Bombardment and Capture of Island No. 10, April 7, 1862

Porter's Fleet Running the Vicksburg Batteries, April 16, 1863

On a Saturday afternoon in October 1861, a large crowd gathered at the Carondelet Marine Ways to observe the launching of the first ironclad built in the Western Hemisphere. As the gunboat was gradually lowered into the Mississippi River, one observer commented that the operation went so smoothly, *"…that we found the boat floating gracefully upon the water, and nobody hurt, and not even a lady frightened."*

The builder, *James B. Eads*, had wanted the ironclads named for Union military leaders; however, *Andrew H. Foote*, Commander of the Western Flotilla, decided that the gunboats would instead be named for cities and towns along the Ohio and Upper Mississippi Rivers. Thus, the *CARONDELET, LOUISVILLE, PITTSBURG,* and *ST. LOUIS* were built at Carondelet on the outskirts of St. Louis, Missouri, while the *CAIRO, CINCINNATI,* and *MOUND CITY* were constructed on the banks of the Ohio River at Mound City, Illinois.

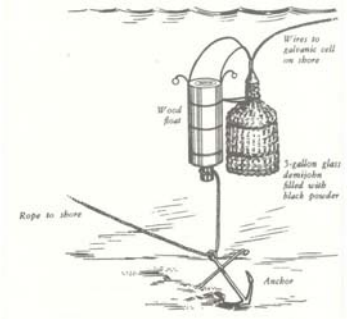
Completed in January 1862, two months before the *MONITOR* and *VIRGINIA* clashed at Hampton Roads, the seven impressive creations were lined up along the river at Cairo, Illinois. Under the command of Admiral *David Dixon Porter*, the ironclads would play an integral role in the Western Theatre of operations during the American Civil War.

Sinking of the *USS Cairo*, December 12, 1862

From their first strike at Ft. Henry on the Tennessee River in 1862, to the Red River Expedition of 1864, the ironclads provided invaluable assistance to the Union campaign on the Western Waters. In many instances, the gunboats had the war wounds to prove it.

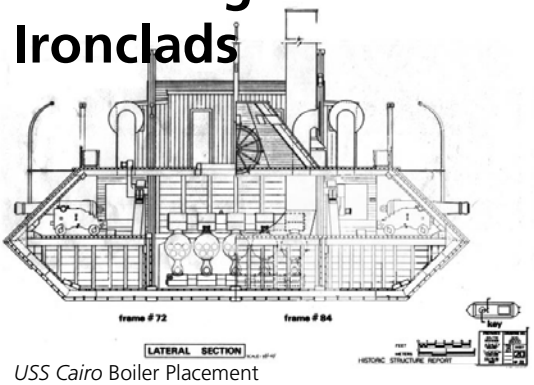
At Ft. Donelson in February 1862, the *ST. LOUIS* sustained 59 hits from Confederate batteries overlooking the Cumberland River. In May of the same year, both the *CINCINNATI* and *MOUND CITY* were heavily damaged by the Confederate rams during action at Ft. Pillow and were run aground to avoid sinking. Later, the *MOUND CITY* suffered one of the heavier losses for a naval vessel in the Civil War, with 150 crew killed or injured when a shell pierced and exploded her steam drum in June 1862.

The *CAIRO*, under the command of Lt. Commander *Thomas O. Selfridge, Jr.*, sank in 12 minutes on December 12, 1862, after hitting two torpedoes (mines) while in the process of trying to clear the Yazoo River of the "infernal machines" - fortunately, with no loss of life. The *CINCINNATI* was sunk during the siege of Vicksburg in 1863 by Confederate batteries firing from the bluffs of Fort Hill, but later raised and refitted by the Union Navy.



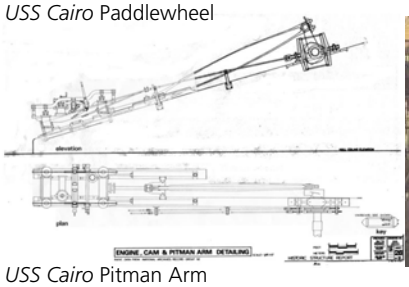
Type of Torpedo that Sank the *USS Cairo*

Powering the Ironclads

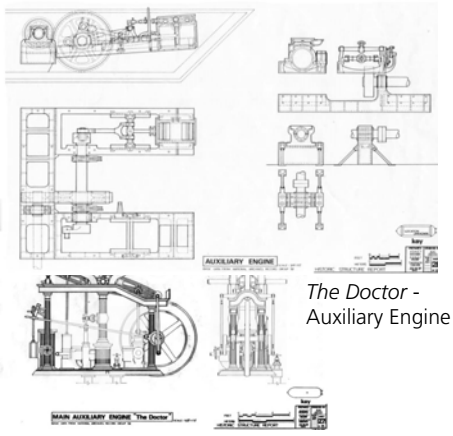


USS Cairo Boiler Placement

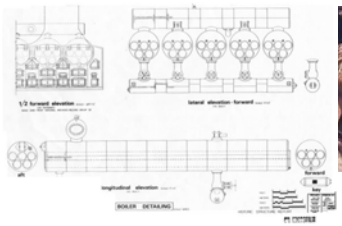

USS Cairo Paddlewheel



USS Cairo Pitman Arm



The Doctor - Auxiliary Engine




USS Cairo Boilers


Restored Boilers on the *USS Cairo*

The seven city-class ironclads, designed by Samuel M. Pook and built by James B. Eads, were constructed between August 1861 and January 1862 at an average cost of $101,808 each. They were nicknamed, *"Pook Turtles"* after their designer and because of their resemblance to mud turtles.

The *U.S.S. CAIRO* is the only surviving example of a class of warships specifically designed for use on the Mississippi River during the Civil War. The *CAIRO*'s engines and boilers are among the oldest and best-surviving examples of typical engines designed for boats plying the western rivers.

The reciprocating steam engine was the universal primer mover in self-propelled craft during that era. These were simple, single-expansion, and either condensing or non-condensing. The reciprocating engine has a piston that slides within a cylinder and is attached by means of a rod to a paddle wheel. The *CAIRO* was equipped with a two-cylinder non-condensing, reciprocating, main steam engine.

The cylinders, mounted at a 15°-angle were made of cast iron with a 22-inch stroke. On one side of the cylinder, at each end, was a supply nozzle, with an opening of 9 inches by 4 inches, with a flange 15 inches square by 1.25 inches thick, for receiving steam. On the other side of the cylinder were two similar nozzles for steam exhaust from the cylinder.

The cast iron piston, with a 4-inch space for packing, was attached to a wrought iron piston rod that was 4 inches in diameter and 110 inches long. The engine exhaust steam heated water in the pre-heater, and then exhausted to the stack. When steam was admitted through one valve, it forced the piston to the other end of the cylinder where the same action occurred. Exhaust valves were employed for expulsion of the spent steam.

A one-cylinder auxiliary engine, also called "the doctor" because it cured the ills of the steam boat, was used to drive two cold-water pumps and two main force pumps to supply the boiler with water, drawing it from the river. The cylinder was made of cast iron with a diameter of 8 inches and a length to accommodate a 21-inch stroke. The cast iron piston, which was 5 inches deep and fitted with metallic packing rings, was attached to a piston rod which was 1.75 inches in diameter and 3 feet long.

Steam ports were 0.5 inch by 2 inches, and the exhaust port was 1 inch by 2 inches. The steam chest was 0.5-inch thick. The *CAIRO* doctor was lost during the salvage, but was traditionally located aft of the boilers between the cylinders of the main engine. The cold-water pumps sent water into the pre-heater where the water was heated by exhaust steam from the main engine. The main force pumps sent the heated water into the aft mud drum and to the 5 high-pressure boilers. Maximum speed was roughly 9 mph or 5.5 knots.

After salvage, these engines were cleaned and painted with a rust-resistant primer. They are now located aboard the *USS CAIRO* on display at Vicksburg National Military Park, and have been declared a National Historic Mechanical Engineering Landmark by the American Society of Mechanical Engineers.

Restoring a Piece of Civil War History

USS Cairo Salvage Site

USS Cairo Artifacts

Pilot House

Midsection

Cannon

Bow

Raising the *USS Cairo*

USS Cairo Stored at Ingalls' Shipyard

For almost a hundred years the *USS CAIRO* lay quietly beneath the muddy waters of the Yazoo River. In 1956, armed with the combined knowledge of the ironclad's history and that of the river, Ed Bearss, Warren Grabau, and Don Jacks set out to find the sunken treasure. With only a small boat and a pocket compass, they scanned the river, and when they passed over the 122 tons of iron plating, the compass needle swung wildly. Subsequent dives not only proved the presence of the *CAIRO*, but that she was virtually intact on the bottom of the river.

Buried within the gunboat were multitudes of tools, weapons, ship's stores, and a vast array of personal items left by the crew as they hastily abandoned the sinking vessel. The citizens of Vicksburg, realizing the gunboat's historic importance, began work to raise the gunboat.

After several years of work, the *USS CAIRO* was finally raised in three sections in 1964. It was stored at Ingalls' Shipyard in Pascagoula, MS until 1977, at which time the title was passed to the National Park Service. Following a seven-year restoration, the *CAIRO* was opened to the public in Vicksburg National Military Park in 1985.

Restoring the *USS Cairo*,
Vicksburg National Military Park

Bird Damage,
USS Cairo

Old Canopy, *USS Cairo*

Although raising and restoring the *USS CAIRO* has been accomplished, a greater challenge - that of continued preservation and protection of this unique historical treasure - arose. Since restoration, the gunboat had been displayed beneath an open-sided canopy that failed to provide adequate shelter for the historic gunboat.

Exposed to fluctuating temperatures, humidity, ultraviolet light, rain, bird droppings, insects, and feral animals, the *CAIRO*'s historic fabric badly deteriorated to the point where more preservation was crucial or the gunboat would be lost. Park Service specialists assessed the threats to the historic gunboat and developed a plan for its continued preservation.

A new canopy, a canvas-type structure, has been erected, and provides better shelter for the gunboat. Extending down farther on all sides, it protects the *USS CAIRO* from driving rain, and its underside has little exposed framework, discouraging the roosting of birds. The canopy replacement project involved three steps: protecting the *CAIRO* with a temporary shelter, removing the old structure, and installing the new canopy. Beneath the new canopy, this Civil War ironclad will remain intact, a powerful part of America's history.

New Canopy, *USS Cairo*